

FRENCH REPUBLIC  
NATIONAL INSTITUTE OF INDUSTRIAL PROPERTY  
PATENT NO. 2 709 422 A1

Int. Cl.<sup>6</sup>: A 61 M 23/00  
A 61 B 5/048  
A 61 N 1/05

Filing No.: 93 10580

Filing Date: August 31, 1993

Date of Public Access  
to the Application: March 10, 1995, Bulletin 95/10

VAGINAL OR ANAL ENDOCAVITARY PROBE

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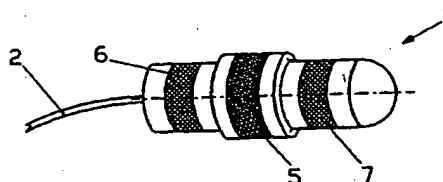
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[Abstract]

The subject of the present invention is a vaginal or anal endocavitary probe.

It consists of a vaginal or anal endocavitary probe (1) which, in addition to the two usual measurement electrodes (6,7), has reference electrode (5), with a box of small size worn by the patient being connected by cable (2) to said probe and containing a recording system or a transmitter which transmits by wireless connection the results of the measurements to a monitoring apparatus which is itself equipped with a receiver or a connector allowing it to be connected to the recording box.

It applies to the medical domain and is intended for electromyographic recordings of the internal vaginal or anal musculature.



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The probes which have been produced to this day have two conducting rings used either to stimulate the perineal musculature or to record or display on specific screens the variations of muscular electrical potential. In order to obtain reliable measurements, the system must be coupled with a "ground," or reference electrode, which makes suitable reproducibility of the measurements possible. This electrode is generally connected, on one hand, to the apparatus, and on the other hand, on the patient (hip, tibia, etc.) by a shielded cable.

The essential problem lies in the fact that the measurements or recordings are usually made in the prone position, which only constitutes a first step of the verification of the proper muscular functioning. The plug probe described in French Patent No. 92 08 648, filed on July 6, 1992 by the same inventor, offers an important advantage due to its small size, which allows one to have the patient switch to an erect posture in order to record the patient's vaginal muscular locking potentials standing and during exertion. However, the limit of this activity is quickly reached because the wires and tubes which attach the patient to the apparatus are a hindrance to the natural movements, besides the fact that the recordings or measurements can only be performed with the patient in the nude.

The device according to the present invention eliminates all these disadvantages. In effect, it makes it possible not only to eliminate the cable connecting the probe to the display or recording apparatus, while obtaining a reliable recording with complete freedom of movement and of distance with respect to the monitoring screen, but also to perform the measurements and tests while the patient is dressed for doing orthostatic exertional exercises.

It consists of a vaginal or anal endocavitary probe which, in addition to the two usual measurement electrodes, has a reference electrode, with a box of small size worn by the patient being connected by cable to said probe and containing a recording system or a transmitter which transmits by wireless connection the results of the measurements to a monitoring apparatus which is itself equipped with a receiver or a connector allowing it to be connected to the recording box.

In the appended drawings given as non-limiting examples of embodiments of the subject of the invention:

Figures 1 and 2 represent two plug-type vaginal probe variants,

Figure 3 represents an inflatable probe, and

Figure 4 shows, on a different scale, a probe with its telemetric box.

The device, Figures 1 to 4, consists of endocavitary probe 1 connected by flexible cable 2 to transmitter box 3, which is in wireless telemetric connection with a monitoring and/or recording apparatus (not represented).

Probe 1, preferably vaginal, can be rigid, of the "plug" type (Figures 1 and 2), or inflatable (Figure 3). In the second case, it is equipped with a valve and tube 4 which can be connected to a pump, for example, a hand pump of the rubber syringe type. It can also be made up of a rigid part and an inflatable part which are situated on either side of a longitudinal plane containing the axis of said probe.

This probe is an electromyographic (EMG) recorder of the female vaginal musculature. A different model corresponding to the anorectal anatomy can be devised, but it is of less interest in the case in point, the vaginal wall having easier access under these circumstances.

Probe 1 is provided with additional metallic reference electrode 5 in addition to the two measurement electrodes 6,7 which exist on the probes of this type. Such a probe makes it possible to make a so-called "biofeedback" endovaginal recording under the real conditions of orthostatic activity.

The device according to the invention makes it possible to have the reference electrode on the vaginal probe itself and therefore to eliminate the corresponding shielded cable to the monitoring apparatus. The data transmission connection can occur through a direct connection on computerized telemetric transmitting box 3, whose size is roughly that of a pack of cigarettes, which, by infrared radiation, Hertzian waves or other, will instantaneously transmit the data recorded during exertions to the monitoring apparatus equipped with a screen.

Box 3 can be equipped with a memory which stores the data measured on the patient, at home, for example. In this case, it will then be sufficient to establish the telemetric connection or to connect the box to the monitoring apparatus by means of a connector provided for this purpose, in order to allow the practitioner later to study the prerecorded result of the measurements.

In all cases, the patients are no longer nude but dressed for doing orthostatic exertional exercises, without being connected by a cable to the monitoring apparatus. Transmitter or recorder box 3 can be hooked on the waistband of a jogging garment, shorts or other.

The positioning of the various constitutive elements gives the object of the invention the maximum of useful effects which to this day have not been obtained by similar devices.

### Claims

1. A vaginal or anal endocavitary probe intended for electromyographic recordings of the internal vaginal or anal musculature, characterized by the combination of endocavitary probe (1) which, in addition to the two usual measurement electrodes (6,7), has reference electrode (5), and box (3) of small size worn by the patient, connected by flexible cable (2) to the above-mentioned probe, making it possible to transmit the results of the measurements to a monitoring apparatus without being connected to it by cable at the time when the measurements are taken.

2. A device according to Claim 1, characterized by the fact that box (3) contains a transmitter which transmits in real time by wireless telemetric connection the result of the measurements to a the monitoring apparatus which is itself equipped with a receiver.

3. A device according to Claim 1, characterized by the fact that box (3) contains a memory which records the measurements in order later to transmit them prerecorded to the monitoring apparatus thanks to a wireless telemetric connection.

4. A device according to either of Claims 2 or 3, characterized by the fact that the telemetric connection between box (3) and the monitoring apparatus occurs by infrared radiation.

5. A device according to either of Claims 2 or 3, characterized by the fact that the telemetric connection between box (3) and the monitoring apparatus occurs by Hertzian waves.

6. A device according to Claim 1, characterized by the fact that box (3) contains a memory which records the measurements in order later to transmit them prerecorded to the monitoring apparatus thanks to a connector allowing it to be connected to the latter.

7. A device according to any one of the preceding claims, characterized by the fact that endocavitary probe (1) is rigid, of the "plug" type.

8. A device according to any one of Claims 1 to 6, characterized by the fact that endocavitary probe (1) is of the inflatable type.

9. A device according to any one of Claims 1 to 6, characterized by the fact that endocavitary probe (1) is made up of a rigid part and of an inflatable part which are situated on either side of a longitudinal plane containing the axis of said probe.

